BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of

Improving Public Safety Communications in the 800 MHz Band	)	
Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels	)	WT Docket No. 02-55

Dated: May 6, 2002

To: The Commission

COMMENTS OF THE NEW YORK CITY TRANSIT AUTHORITY

The New York City Transit Authority (NYCT) hereby submits the following comments in response to the above referenced Notice of Proposed Rule Making (NPRM). The Federal Communications Commission (the Commission) requested comments on a number of issues throughout the NPRM.

BACKGROUND/INTRODUCTION

NYCT is the nation's largest provider of mass transit. In the City of New York, through its bus and subway system, it serves more than six million people each working day, and the presence and reliability of those services are essential to the functioning of both the City and the greater metropolitan region.

NYCT is the largest affiliated agency of the Metropolitan Transportation Authority which, through its various affiliates and subsidiaries, provides mass transportation services via bus, subway, and commuter rail operations throughout the metropolitan region. During the proceedings of the Public Safety Wireless Advisory Committee (PSWAC) in 1996,

NYCT submitted a position statement[1] which describes in more detail the nature and extent of public safety services provided by large, publicly-owned, governmental providers of mass transportation services, which have entrusted in their care the lives and safety of millions of people each working day. The position statement delineated these entities' communications needs and their dependency on effective, reliable, wireless communications to perform their essential governmental functions. As noted by the Commission, dependence on effective, immediate and reliable wireless communications has become even more important as a result of the events of September 11, 2001.

It is not NYCT's intent to alarm the public concerning the significant and far reaching consequences of any potential terrorist threat affecting the transportation network of the City of New York. It is, or should be, obvious that even unfounded threats can wreak grave havoc on the life and safety of the public if subway trains and stations must be evacuated safely. Indeed, even one rush-hour subway train may carry between 1,000 - 2,000 people. NYCT's buses and subways were the subject of multiple bomb threats and anthrax scares following the tragic events of last Fall. NYCT personnel, along with Police, Fire and EMS personnel, must respond immediately to such events in order to protect the safety of its passengers. Interference with radio communication is simply unacceptable.

[1] The "New York City Transit Authority Position Statement Concerning Matters Before PSWAC" was submitted to the PSWAC Steering Committee and Sub-Committee chairs. Copies were made available to the public at the PSWAC Steering Committee meeting of June 25, 1996, held in Washington, D.C. A copy of the comments can also be found on the Commission's website using the Electronic Comment Filing System (WT Docket No. 96-86), The Development of Operational, Technical, and Spectrum Requirements for Meeting Federal, State, and Local Public Safety Agency Communication Requirements through the Year 2010.

SCOPE OF COMMENTS

NYCT welcomes this opportunity to submit comments and appreciates the Commission's acknowledgement of several key points, including, the recognition of inadequate spectrum for public safety needs and the fact that CMRS providers are, indeed, operating in a manner that causes interference to public safety providers. NYCT also recognizes that, in its proposal, Nextel has indicated that it is prepared to commit $500 million to assist public safety services in meeting relocation costs.

The various proposals are complex; given the relatively brief time frame for comments, we will limit these remarks to a description of NYCT's 800 MHz frequencies; the actual interference experienced by NYCT and attempts to address the problems; and the costs and concerns of public entities that might be affected if the current proposals for displacement were to be accepted. In sum, the underlying principle must be that those entities which are the source of interference and which would be the greatest beneficiaries of re-allocation of frequencies must absorb *all* costs actually or potentially incurred by governmental entities forced to relocate. While we applaud the motivating factors for reallocating frequencies -- a desire to reduce interference and increase public safety frequency availability -- it must be recognized that public entities, such as NYCT, are under constant and increasing financial pressure to continue to provide their essential services, while necessarily re-allocating resources in order to respond to security concerns in light of the ongoing threats of terrorism. Any major disruption in mass transit services would drastically affect the lifeblood of the City of New York.

After reviewing the history of NYCT's 800 MHz frequencies, NYCT organized its comments in response to the NPRM by utilizing or referencing the paragraph numbering sequence employed in NPRM WT Docket No. 02-55, as released March 15, 2002.

NYCT's Radio Service Eligibility and 800 MHz Radio License History

NYCT is eligible as a Public Safety entity under the Commissions' Rules. Local governmental entities, including public authorities, historically have been included within the framework of the public safety radio service under Part 90. The Commission has long recognized that there are a wide variety of essential governmental functions and public safety services performed by an array of governmental entities which extend beyond traditional emergency first responders.

In 1983, NYCT pursued an 800 MHz spectrum allocation for its designed and funded APCO Project 16 compliant simulcast trunked radio system. Public safety spectrum in the 806 MHz band in the New York City region was not available. As the Commission is aware, the New York City area is one of the most radio frequency scarce areas in the United States. This problem is particularly acute for public safety entities. NYCT was fortunate enough to possess secondary eligibility as a provider of transportation services and obtained twenty channels in the 806 MHz spectrum under the eligibility of Industrial/Land Transportation rules. NYCT was able to obtain spectrum and construct its public safety radio system to meet its governmentally tasked duties. This history reflects that undue or artificial reliance on the radio service classification in promulgating rules and plans for reallocation of frequencies could have severe and unintended consequences for governmental entities that, because of circumstances, may find their frequencies located in a particular classification. NYCT would urge the Commission to focus on the functions

provided by the public entities and their critical relation to the life, safety and health and welfare of the public they serve rather than to impose requirements solely based upon the radio classification service where their frequencies originated.

In 1987 when the Commission established rules for the National Public Safety Planning Advisory Committee (NPSPAC) 821-824 MHz channels, NYCT was already constructing and operating its assigned 806 MHz channels. The NPSPAC Regional Planning Committee (RPUC) Region 8 subsequently received applications and immediately distributed channels in the tri-state New York City region. To no surprise to anyone familiar with public safety needs in this region, no "excess" or unassigned channels remained. NYCT's ability to perform its functions in the 806 MHz channels as a land transportation licensee, served not only its own purposes, but also alleviated spectrum allocation pressure for other public safety providers in the region by enabling public safety channels to be allocated for their use.

NYCT's 800 MHz Radio System Architecture

NYCT operates an 806 MHz twenty (20) channel simulcast Motorola Smartnet Trunked radio system. It was constructed at a cost of approximately $50 million in late 1980s dollars. Four transmitter/receiver locations are strategically located in New York City and linked via dedicated microwave links. The construction and operation of the system is that of a typical public safety radio system as detailed in paragraph 11 of the NPRM. NYCT operates 4700 mobiles and 1500 portable radios on this system. The system is primarily used on NYCT's bus system which operates 24/7/365 in all five boroughs of the City of New York. The system includes silent alarm and other features over and above voice communications to protect the safety of our passengers and operators.

Reports of Radio Coverage Difficulties & Interference (NPRM Paragraph 16 & 19)

Within the last six months and continuing to the present, NYCT has been experiencing interference in its 800 MHz radio system. Specific areas of prior, good portable radio coverage have now become areas where no communications are possible. NYCT radio sites and equipment were checked and were operating to specifications.

Technicians surveyed the reported locations and radio frequency measurements taken suggested that some form of localized interference was present. An employee working at the first reported location noticed that a new communications "cell site" was recently installed nearby with antennas literally several feet from his foot post.

Engineering staff familiar with problems being reported in other parts of the United States inspected the area and found this site to be a new Nextel site placed into service at the same time reports of coverage problems were reported from this location. To date, NYCT has approximately a dozen reports of similar coverage problems throughout all counties of New York City affecting NYCT's operations on 800 MHz.

NYCT's technical representative on radio frequency matters has also worked in connection with the Associated Public Safety Communications Officials' (APCO) Project 39 Committee on these issues, which has prepared a *Best Practices* guide that provides technical recommendations to reduce or alleviate interference. NYCT is testing and implementing some of the recommendations. In the first case of reported interference, the root cause of our problem has been established as Nextel. Through a combination of improving NYCT's portable radio specification[2] at this location and a drastic reduction in

[2] NYCT has modified a number of portable radios used by field technicians investigating interference complaints (Motorola SRN # 1347 In-band High Level Intermodulation Enhancement for MTS 2000 800 MHz Radios).

Effective Radiated Power (ERP) of the Nextel site, vital communications service was restored in the area. The primary cause of localized system degradation and interference appears to be stronger sideband energies and out of band emissions. In this first reported incident, the noise floor locally was elevated from below –100 dBm to –30 dBm on its trunking control channel frequency, completely blocking the desired radio signal. Similar conditions exist at other reported locations. Each area has a low height above ground CMRS site that is raising the noise floor greater than 20-30dB above the radio signal strength of the NYCT radio system, disabling communications. As further investigation develops, the source of interference will be reported to APCO.

Interference with NYCT mobile communications, much less disabling bus communications entirely, can have quite immediate and disastrous consequences to the public. In NYCT's PSWAC comments (WT Docket 96-86), a substantial segment was devoted to the critical safety and incident management functions which the bus communications system address. It should be noted that on September 11, 2001, within minutes of the first plane hitting the World Trade Center, buses were dispatched from the Hudson Depot a few blocks north to evacuate people from the area. Throughout the day, NYCT buses were sent from the outlying boroughs to transport firefighters and rescue personnel to the area, and to evacuate people from Manhattan.

In paragraph 16 of the NPRM, the Commission seeks comment on all available interference reduction options that could be applied to the problem. In NYCT's first reported interference case, the CMRS provider, was able to reduce its ERP from +48dBm to +33dBm. This reduction of ERP by the provider and a factory-authorized NYCT modification to selected portable radios to improve receiver specifications, partially

remedied the situation enough to have effective two way communications on portable radios in the area.

NYCT's first reported case opens a number of questions as to the definition of low power, low height CMRS sites. NYCT, however, recommends that a definition of low power low height above ground CMRS sites be established and subject to an ERP derating based on antenna height above ground. The ERP that Nextel had at this site was +48dBm per sector per frequency with the intention of covering not more than 2000 feet. Typically a +48dBm ERP would not be considered "low power" by most radio communications engineers for such a limited coverage area.

It is not NYCT's intent to single out Nextel as a problem or to limit a technical discussion to the factor it experienced. To date, NYCT's problems have been isolated to that CMRS provider and appear to be related to low antenna sites and moderately high ERPs. However, APCO Project 39 has cataloged many problems throughout the country.

BAND RESTRUCTURING (NPRM Paragraphs 20-28)

The interference being received by public safety and other users on the 800 MHz spectrum is a very serious condition; its impact clearly needs to be addressed. Band restructuring proposes some relief from the interference and, given the potential for public safety entities to obtain drastically needed spectrum, it at first glance appears to be an inviting method of proceeding. However, other factors caution against the wholesale embrace of band restructuring as a panacea.

The NAM proposal described in paragraph 21 condenses the Public Safety bands formerly in the 806 and 821 MHz bands into 5 MHz of paired base/mobile channels and allocates an equal amount of spectrum for SMR, Business, & Industrial/Land

Transportation services. The effect in congested metropolitan areas, including the New York City area, would be severe. Virtually all users would need to be moved because of spectrum "packing" limitations and to preserve the necessary co-channel and adjacent channel protection currently afforded to incumbent licensees. The cost that would need to be borne by governmental entities would be very high. For NYCT, all subscriber units in the field would need to be reprogrammed. Base stations/repeaters, combining equipment, and antenna systems would need to be replaced, while, at the same time, maintaining a minimal level of radio system service to continue performing essential duties. NYCT estimates that such a restructuring to NYCT's live radio system would cost, at a minimum, $3 - 5 million. This would also place great strain on personnel and other resources during this transition period, where such attention must also be directed to other critical security and safety needs. NAM's proposal offers very little additional public safety spectrum and no relief from the cost burdens it would impose.

The Nextel proposal described in paragraph 23 would be disruptive to incumbent 800 MHz licensees, especially for those located in the Industrial/Land Transportation services such as NYCT. While its proposal does offer a major improvement for Public Safety spectrum; it is not viable for other public safety providers, such as NYCT. As proposed, NYCT would be required to migrate to the 900 MHz band or remain secondary on its existing channel solely because our present license was issued in Industrial/Land Transportation radio service or apply for spectrum within the designated Public Safety

Band.[3]. Neither alternative is acceptable. A migration for NYCT to a 900 MHz system would likely cost in excess of $150 million as NYCT would require a total system re-design and re-construction of all existing radio facilities to provide the equivalent level of service in the New York City area, plus replacement of all mobile and portable units. Retuning of subscriber units would not be possible for such a migration. Obtaining spectrum in the expanded public safety band would be uncertain as frequency allocations in New York City area would be exhausted very quickly to meet the needs of traditional emergency first responders. And if such spectrum were obtained, the minimum cost to migrate to these new channels would be the same as the impact to NYCT from NAM's proposal, $3-5 million. NYCT, because of the nature of its communications, cannot accept secondary status on those frequencies because of anticipated interference in the guard band.

The proposal in paragraph 26 appears to have the least impact on incumbent licensees as it re-categorizes the lower band leaving the NPSPAC channel allocations intact. For NYCT such a rebanding proposal would have the same financial burden as the NAM proposal. Of greater concern, however, is that NYCT channels in the Industrial/Land Transportation radio service would be a "buffer" between public safety and SMR systems. The potential for continued harmful interference would continue to exist. NYCT could find itself in the position of spending millions in public funds to facilitate a mandated spectrum move while continuing to experience unacceptable interference compromising vital communications.

[3]As noted, the Nextel proposal seems to be wholly dependent on the *status* of the *license* as opposed to the *functions* performed by the *licensee*. The fact that NYCT was secondarily eligible to receive licensing in the land transportation services has facilitated efficient use of the spectrum in the congested NYC metropolitan area where multiple public safety providers have been forced to compete for limited public safety frequencies.

In paragraph 27, the Commission seeks comment on whether intermodulation interference is the primary interference mechanism. NYCT's own experience is that Nextel's engineers obtained NYCT's radio frequencies and reconfigured Nesxel's interfering site so that intermodulation products were removed. Yet radio coverage in the area continued not to function. As indicated in an earlier paragraph of these comments, it is NYCT's technical opinion that localized system degradation and interference could have been caused by stronger sideband energies and out of band emissions.

ADDITIONAL SPECTRUM FOR PUBLIC SAFETY AGENCIES

In the New York City metropolitan area, there continues to be substantial need for additional public safety spectrum which far outweighs the availability of channels or likely availability of channels in the foreseeable future. Absent a plan to have the CMRS providers actually commit adequate funds to accomplish band restructuring and the move to other frequencies by public service providers, the much sought-after additional spectrum may prove to be more illusory than attainable.

CONCLUSION

It would appear that CMRS providers would be the primary beneficiaries of the band restructuring. Creation of a block of spectrum for such operation would seemingly be quite desirable for business and technical reasons. However, to the extent that these same providers are the cause of interference, all costs associated with corrective measures ought to be borne by the interfering party, not the incumbent licensees. The burden to correct the interference historically has rested on the interfering party in accordance with FCC Rules and Regulations Part 90.173(b).

The prospect of securing additional spectrum for public safety use is commendable; the costs, however, on individual licensees are significant, if not, indeed, prohibitive. Governmental entities must be protected from having these costs imposed on them, particularly when their resources, personnel, financial and otherwise, must be devoted to other causes.

Dated: May 6, 2002
Brooklyn, NY

Respectfully submitted,

NEW YORK CITY TRANSIT AUTHORITY

Florence Dean
Executive Assistant General Counsel
130 Livingston Street
Brooklyn, NY 11201
(718) 694-3901
flodean@nyct.com

Joseph L. Yurman, P.E.
Principal Engineer,
Wireless Communications
and Spectrum Management
2 Broadway, 3rd Floor
New York, NY 10004
(646) 252-3231
joyurma@nyct.com